General

Guideline Title

Acute rhinosinusitis in adults.

Bibliographic Source(s)

University of Michigan Health System. Acute rhinosinusitis in adults. Ann Arbor (MI): University of Michigan Health System; 2011 Aug. 9 p. [6 references]

Guideline Status

This is the current release of the guideline.

This guideline updates a previous version: University of Michigan Health System. Acute rhinosinusitis in adults. Ann Arbor (MI): University of Michigan Health System; 2007 Mar. 8 p.

Regulatory Alert

FDA Warning/Regulatory Alert

Note from the National Guideline Clearinghouse: This guideline references a drug(s) for which important revised regulatory and/or warning information has been released.

- May 12, 2016 – Fluoroquinolone Antibacterial Drugs: The U.S. Food and Drug Administration (FDA) is advising that the serious side effects associated with fluoroquinolone antibacterial drugs generally outweigh the benefits for patients with sinusitis, bronchitis, and uncomplicated urinary tract infections who have other treatment options. For patients with these conditions, fluoroquinolones should be reserved for those who do not have alternative treatment options.

Recommendations

Major Recommendations

Note from the University of Michigan Health System (UMHS) and the National Guideline Clearinghouse (NGC): The following guidance was current as of August 2011. Because UMHS occasionally releases minor revisions to its guidance based on new information, users may wish to consult the original guideline document for the most current version.

Note from NGC: The following key points summarize the content of the guideline. Refer to the full text of the original guideline document for detailed information on diagnosis, treatment, and medications.

The strength of recommendation (I-III) and levels of evidence (A-D) are defined at the end of the "Major Recommendations" field.

Definitions

Acute rhinosinusitis is an inflammation of the paranasal sinuses and the nasal cavity lasting no longer than 4 weeks. It can range from acute viral rhinitis (the common cold) to acute bacterial rhinosinusitis. Fewer than 5 in 1,000 colds are followed by bacterial rhinosinusitis.

Diagnosis

Estimate the probability of acute *bacterial* rhinosinusitis (ABRS) based on history and physical examination. Best predictors include maxillary toothache, poor response to decongestants, patient report of colored nasal discharge, and purulent secretions by exam. Duration of symptoms has some predictive value. Patients with symptoms beyond 10 days have an increased likelihood of ABRS. Upper respiratory tract symptoms that persist >10 days or worsen after 5 to 7 days are a moderately sensitive but not specific predictor of ABRS superimposed on a viral illness *[D]*.

Treatment

Prescribe antibiotic therapy based on benefits and risks. Benefits depend on the probability of bacterial infection and the severity of symptoms. Risks of antibiotics include allergic reaction, potential side effects, and promotion of bacterial resistance. Antibiotics have not been shown to decrease the risk of complication or progression to chronic rhinosinusitis. Symptoms resolve within two weeks without antibiotics in 70% of cases and with antibiotics in 85% of cases.

First line antibiotics for acute bacterial rhinosinusitis are amoxicillin and trimethoprim/sulfamethoxazole. They are superior to placebo and as effective as other agents that are more expensive, have greater risk of side effects, and/or should be reserved for more serious infections *[I A]*. Use first-line alternatives (e.g., doxycycline, azithromycin) only for patients allergic to both first line drugs. The usual initial course of antibiotics should be 10-14 days. An exception is azithromycin (500 mg daily), which should be prescribed for 3 days.

For partial but incomplete resolution after an initial course of antibiotics, extend the duration of antibiotic therapy by an additional 7 to 10 days for a total of 3 weeks of antibiotics *[II A]*.

For minimal or no improvement with initial treatment, re-evaluate your diagnosis and consider changing to an antibiotic with broader coverage to include resistant strains. Options include amoxicillin at high dose, amoxicillin/clavulanate, levofloxacin, and moxifloxacin *[II A]*. Avoid ciprofloxacin due to limited activity against *Streptococcus pneumoniae*. Avoid telithromycin because risks for hepatotoxicity, loss of consciousness, and visual disturbances may outweigh potential benefits for ABRS *[III A]*.

Ancillary therapies (see Table 5 in the original guideline document) for acute rhinosinusitis have little supporting data. Some studies examining treatments for viral upper respiratory infections have shown:

- Efficacy in symptom control: decongestants (especially topical decongestants), topical anticholinergics and nasal steroids (high dose) *[II A]*
- Possible efficacy: zinc gluconate lozenges, vitamin C, Echinacea extract, saline irrigation [*conflicting or insufficient data*]
- No significant benefit: guaifenesin (except possibly at high dose), saline spray, steam, antihistamines (except in patients where allergic rhinitis is a contributing factor)

For recurrent acute rhinosinusitis or acute rhinosinusitis superimposed on chronic rhinosinusitis, the addition of high dose nasal corticosteroids may decrease duration of symptoms and improve rate of clinical success *[II A]*. However, this is inconvenient, has potential side effects, and significant cost.

Imaging

If symptoms of rhinosinusitis persist for more than three weeks despite antibiotics or recur more than three times per year, a sinus computed tomography (CT) scan should be performed while the patient is symptomatic to reassess diagnosis and determine need for referral *[I C/D]*. CT scans provide much better definition than a plain sinus x-ray series. Plain sinus x-rays, therefore, are not recommended.

- New low dose CT scanners have substantial radiation dose reduction.
- At University of Michigan Health System the charge is $1,468 for any sinus CT scan (low dose, limited, or full).

Definitions:

Levels of Evidence

A. Randomized controlled trials
B. Controlled trials, no randomization
C. Observational trials
D. Opinion of expert panel

Strength of Recommendation

I. Generally should be performed
II. May be reasonable to perform
III. Generally should not be performed

Clinical Algorithm(s)

An algorithm is provided in the original guideline document for the diagnosis of acute bacterial rhinosinusitis.

Scope

Disease/Condition(s)

Acute rhinosinusitis

- Viral
- Bacterial

Guideline Category

Diagnosis

Evaluation

Management

Treatment

Clinical Specialty

Family Practice

Internal Medicine

Otolaryngology

Intended Users

Advanced Practice Nurses

Nurses

Physician Assistants

Physicians

Guideline Objective(s)

To improve quality of care and decrease costs by:

- Accurate diagnosis
- Appropriate medical therapy
- Effective radiological imaging
- Appropriate subspecialist consultation

Target Population

Non-immune compromised adults with suspected or diagnosed acute rhinosinusitis

Interventions and Practices Considered

Diagnosis

1. Probability estimate via history, physical examination, physician's overall clinical impression, transillumination, and temporality of symptoms
2. Identification of predisposing conditions and complications
3. Diagnostic imaging, including limited sinus computed tomography (CT)

Treatment/Management

1. First line antibiotics: amoxicillin or trimethoprim/sulfamethoxazole
2. Alternative antibiotics for those allergic to or intolerant of first line antibiotics, including doxycycline, azithromycin, and others
3. Second line antibiotics: amoxicillin at high dose, amoxicillin/clavulanate, levofloxacin, moxifloxacin
4. Adjuvant therapies including:
    - Likely to be effective
        - Decongestants, especially topical decongestants
        - Topical anticholinergics
        - Corticosteroid nasal sprays (high dose)
    - Possibly effective
        - Zinc gluconate lozenges
        - Vitamin C
        - Echinacea extract
        - Saline irrigation
5. Referral for otolaryngology evaluation
6. Surgery in limited cases

Note: Guideline developers considered but do not recommend ciprofloxacin or telithromycin as second line antibiotics. Adjuvant therapies with no proven benefit or not studied in controlling symptoms include steam, saline spray, antihistamines (except in patients with underlying allergic rhinitis), and guaifenesin (except possibly at high doses).

Major Outcomes Considered

- Symptom improvement
- Bacteriologic cure rates
- Efficacy and safety of medications

Methodology

Methods Used to Collect/Select the Evidence

Searches of Electronic Databases

Searches of Unpublished Data

Description of Methods Used to Collect/Select the Evidence

The literature search for this update began with the results of the literature searches performed in 1996 to develop the initial guideline, in 1998 for an update, and in 2004 for an update that included literature through April 2004.

The literature search conducted in 2010 for this update used keywords that were almost identical to those used in the previous searches. However, instead of beginning the search with literature in 2004, the guideline team accepted the search strategy and results of the search performed for the "Clinical practice guideline: Adult sinusitis" commissioned by the American Academy of Otolaryngology – Head and Neck Surgery (see Related National Guidelines in the original guideline document). That search included literature through November 2006. The search for this update added literature from December 2006 through April 2010. That time frame was used for all keyword searches except for Dental sinusitis and odontogenic sinusitis, new search terms for which the search began with January 2000.

The search was conducted prospectively on Medline using the major keywords of: rhinosinusitis, sinusitis; clinical guidelines, controlled clinical trials, cohort studies; adults; and English language. Terms used for specific topic searches within major key words included: history; physical exam, signs, symptoms; predictors; computed tomography, magnetic resonance imaging, x-ray, ultrasound; sinus aspiration; nasal culture; dental sinusitis, odontogenic sinusitis; diagnosis not included above; observation, saline, steam, postural drainage; decongestants; cough suppressants; antihistamines; antibiotics; guaifenesin; corticosteroids; zinc; vitamin C; ipratropium; capsaicin; Echinacea; treatment failure, recurrence, persistent; immunocompromised, immunosuppressed, immunomodulators, transplant; treatment or management not included above. Specific search strategy available upon request.

The searches were conducted in components each keyed to a specific causal link in a formal problem structure. The search was supplemented with very recent clinical trials known to expert members of the panel. Negative trials were specifically sought. The search was a single cycle.

Number of Source Documents

Not stated

Methods Used to Assess the Quality and Strength of the Evidence

Weighting According to a Rating Scheme (Scheme Given)

Rating Scheme for the Strength of the Evidence

Levels of Evidence

A. Randomized controlled trials
B. Controlled trials, no randomization
C. Observational trials
D. Opinion of expert panel

Methods Used to Analyze the Evidence

Review of Published Meta-Analyses

Systematic Review

Description of the Methods Used to Analyze the Evidence

Not stated

Methods Used to Formulate the Recommendations

Expert Consensus

Description of Methods Used to Formulate the Recommendations

When possible, conclusions were based on prospective randomized controlled trials (RCTs). In the absence of RCTs, observational studies were considered. If none were available, expert opinion was used.

Rating Scheme for the Strength of the Recommendations

Strength of Recommendation

I. Generally should be performed
II. May be reasonable to perform
III. Generally should not be performed

Cost Analysis

A formal cost analysis was not performed and published cost analyses were not reviewed.

Method of Guideline Validation

Comparison with Guidelines from Other Groups

Peer Review

Description of Method of Guideline Validation

Drafts of this guideline were reviewed in clinical conferences and by distribution for comment within departments and divisions of the University of Michigan Medical School to which the content is most relevant: Family Medicine, General Medicine, and Otolaryngology–Head and Neck Surgery. The Executive Committee for Clinical Affairs of the University of Michigan Hospitals and Health Centers endorsed the final version.

This guideline is consistent with national guidelines on acute sinusitis produced by the American Academy of Otolaryngology–Head and Neck Surgery Foundation and the American Academy of Allergy, Asthma and Immunology.

Evidence Supporting the Recommendations

Type of Evidence Supporting the Recommendations

The type of evidence is identified and graded for the most significant recommendations (see the "Major Recommendations" field).

When possible, conclusions were based on prospective randomized controlled trials (RCTs). In the absence of RCTs, observational studies were considered. If none were available, expert opinion was used.

Benefits/Harms of Implementing the Guideline Recommendations

Potential Benefits

- Timely, accurate diagnosis and appropriate treatment of acute rhinosinusitis
- Cost-effective prescription of antibiotics and use of imaging technology
- Appropriate use of subspecialist consultation

Potential Harms

- Risks of treating with antibiotics include severe allergic reaction, potential antibiotic side effects, and bacterial resistance.
- Topical decongestant agents use should be limited to 3 days due to the risk of rebound vasodilation (*rhinitis medicamentosa*) or atrophic rhinitis.
- Systemic decongestants should be used with caution in stable hypertension, stable ischemic heart disease, diabetes mellitus, prostatic hypertrophy, glaucoma, and the elderly.
- Lovastatin, simvastatin, or atorvastatin should be discontinued while taking macrolides. Macrolides (e.g., azithromycin, clarithromycin) inhibit metabolism of these statins by cytochrome P-450 (CYP) enzymes, increasing serum concentrations of statins to a clinically significant risk for rhabdomyositis. Statins not appreciably metabolized by CYP enzymes are fluvastatin, pravastatin, and rosuvastatin, for which risk of statin toxicity with macrolides is not clinically significant.
- Due to risk for emergence of antibiotic resistance, a fluoroquinolone should be considered only after treatment failure with a first line antibiotic (or allergy to all first-line antibiotics) Fluoroquinolones increase the risk of tendon rupture in those over age 60, in kidney, heart, and lung transplant recipients, and with use of concomitant steroid therapy.
- First generation antihistamines may cause sedation and impair psychomotor functioning.
- Use of high dose nasal corticosteroids may decrease duration of symptoms and improve rate of clinical success. However, this is inconvenient, has potential side effects, and significant cost.
- The significant side effects of systemic steroids must be weighed against any theoretical benefit.
- Major complications of surgery for acute rhinosinusitis are rare, but include hemorrhage, cerebrospinal fluid leakage, intracranial trauma, blindness, and visual disturbances. Minor complications include periorbital hematoma, subcutaneous orbital emphysema, epiphora, synechiae, and natural ostia closure.

Contraindications

Contraindications

Oral decongestants are contraindicated in patients using monoamine oxidase inhibitors (MAOIs) or having uncontrolled hypertension or severe coronary artery disease.

Qualifying Statements

Qualifying Statements

These guidelines should not be construed as including all proper methods of care or excluding other acceptable methods of care reasonably directed to obtaining the same results. The ultimate judgment regarding any specific clinical procedure or treatment must be made by the physician in light of the circumstances presented by the patient.

Implementation of the Guideline

Description of Implementation Strategy

An implementation strategy was not provided.

Implementation Tools

Clinical Algorithm

Patient Resources

Staff Training/Competency Material

For information about availability, see the *Availability of Companion Documents* and *Patient Resources* fields below.

Institute of Medicine (IOM) National Healthcare Quality Report Categories

IOM Care Need

Getting Better

IOM Domain

Effectiveness

Patient-centeredness

Identifying Information and Availability

Bibliographic Source(s)

University of Michigan Health System. Acute rhinosinusitis in adults. Ann Arbor (MI): University of Michigan Health System; 2011 Aug. 9 p. [6 references]

Adaptation

Not applicable: The guideline was not adapted from another source.

Date Released

1996 May (revised 2011 Aug)

Guideline Developer(s)

University of Michigan Health System - Academic Institution

Source(s) of Funding

University of Michigan Health System

Guideline Committee

Rhinosinusitis Guideline Team

Composition of Group That Authored the Guideline

Team Leader: Eric P. Skye, MD, Family Medicine

Team Members: R. Van Harrison, PhD, Medical Education; Jeffrey E. Terrell, MD, Otolaryngology; Denise H. Zao, MD, General Internal Medicine

Guidelines Oversight Team: Connie J. Standiford, MD; Grant Greenberg, MD, MA, MHSA; R. Van Harrison, PhD

Financial Disclosures/Conflicts of Interest

The University of Michigan Health System endorses the Guidelines of the Association of American Medical Colleges and the Standards of the Accreditation Council for Continuing Medical Education that the individuals who present educational activities disclose significant relationships with commercial companies whose products or services are discussed. Disclosure of a relationship is not intended to suggest bias in the information presented, but is made to provide readers with information that might be of potential importance to their evaluation of the information.

Team Member	Company	Relationship
R. Van Harrison, PhD	None	
Eric P. Skye, MD	None	
Jeffrey E. Terrell, MD	Xoran	Shareholder
Denise H. Zao, MD	None	

Guideline Status

This is the current release of the guideline.

This guideline updates a previous version: University of Michigan Health System. Acute rhinosinusitis in adults. Ann Arbor (MI): University of Michigan Health System; 2007 Mar. 8 p.

Guideline Availability

Electronic copies: Available from the University of Michigan Health System Web site .

Availability of Companion Documents

Continuing medical education credit is available from the University of Michigan Health System Web site .

Patient Resources

The following are available:

- Sinusitis (acute bacterial rhinosinusitis). Ann Arbor (MI): University of Michigan Health System; 2011 Sep 2. 2 p. Electronic copies: Available in Portable Document Format (PDF) from the University of Michigan Health System (UMHS) Web site .
- Saline nasal sprays & irrigation. Ann Arbor (MI): University of Michigan Health System; 2011 Sep 22. 2 p. Electronic copies: Available in

PDF from the UMHS Web site .

Please note: This patient information is intended to provide health professionals with information to share with their patients to help them better understand their health and their diagnosed disorders. By providing access to this patient information, it is not the intention of NGC to provide specific medical advice for particular patients. Rather we urge patients and their representatives to review this material and then to consult with a licensed health professional for evaluation of treatment options suitable for them as well as for diagnosis and answers to their personal medical questions. This patient information has been derived and prepared from a guideline for health care professionals included on NGC by the authors or publishers of that original guideline. The patient information is not reviewed by NGC to establish whether or not it accurately reflects the original guideline's content.

NGC Status

This summary was completed by ECRI on August 21, 2000. The information was verified by the guideline developer on November 22, 2000. This NGC summary was updated on May 16, 2005. The updated information was verified by the guideline developer on May 20, 2005. This summary was updated by ECRI on January 27, 2006 following the U.S. Food and Drug Administration (FDA) advisory on Ketek (telithromycin). This summary was updated by ECRI on July 3, 2006 following the updated U.S. Food and Drug Administration (FDA) advisory on Ketek (telithromycin). This summary was updated by ECRI on March 6, 2007 following the updated FDA advisory on Ketek (telithromycin). This summary was updated by ECRI Institute on July 31, 2008. The updated information was verified by the guideline developer on August 15, 2008. This NGC summary was updated by ECRI Institute on November 23, 2011. This summary was updated by ECRI Institute on October 25, 2013 following the U.S. Food and Drug Administration advisory on Fluoroquinolone Antibacterial Drugs. This summary was updated by ECRI Institute on May 18, 2016 following the U.S. Food and Drug Administration advisory on Fluoroquinolone Antibacterial Drugs.

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